TacSat

Microsatellite Deployment on Demand

The Naval Research Laboratory (NRL) in concert with the Office of Force Transformation is developing the concept of using microsatellites for tactical application under the organic control of theater forces.

The TacSat objective is to provide the war-fighter with "Transformational" space-based capability, i.e., a low cost, quick response launch capability for a range of available payloads; a system that is an integral part of the joint taskforce commander's operational plans. As a space-based asset, a TacSat system would make global coverage available to the deployed warfighter. By making these assets an integral part of the warfighter's force, the commander in the field then determines when the TacSats are deployed, with payloads and coverage tailored to his infrastructure needs. An additional benefit of a TacSat capability would be to provide an efficient mechanism for quickly fielding new technologies to counter emerging threats. Such a system is also a better match for today's technology development cycle than traditional satellites.

In this concept of operations (CONOPS) the Joint Chiefs of Staff authorizes the TacSat launch capability into a combatant Commander's contingency operations plan; who in turn would pass along the authority to deploy the TacSat to his designated Joint Task Force Commander (the CJTF).

It is the CJTF who then has the final authority to launch tactical microsatellites with selectable payload capability for his theater of operations. He will provide the launch team with the key parameters, including the specific payload, area of coverage (conflict location), direct downlink location requirements, and the call-up for the mission.

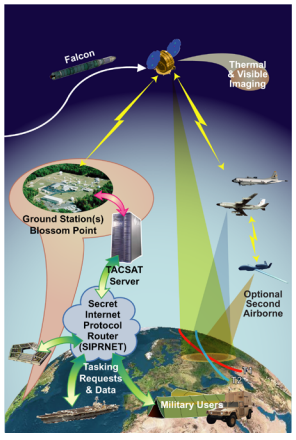
The launch team will analyze this request (precision orbit calculations, feasible downlink schedules, and ground control options) and will perform all launch preparations including launch site selection, range safety clearance, spacecraft/payload integration (battery charging, spacecraft fueling) and integration to the launch vehicle. Nominally launch will occur within three to five days of the CJTF's launch call up order.

An important element of the design of the TacSat system is the degree to which the satellite can be made autonomous through pre-programmed mission commanding and onboard processing. At a minimum, the mission's orbits, initial tasking location, and downlink instructions will be loaded prior to launch. Such prelaunch tasking enables instant mission turn-on without the need of any ground or communications network infrastructure.

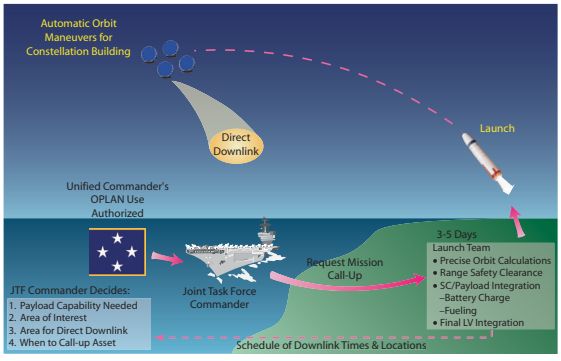
The mission can be enhanced by use of Secret Internet Protocal Router NETwork or SIPRNET-based tasking and data dissemination. Tasking, processing, exploitation, and dissemination is enabled via a TacSat webserver on the DoD SIPRNET. All authorized users will access TacSat tasking by CJTF authority over a SIPRNET webserver. Downlink is through either direct line of sight to the theater, bent pipe to overhead government or commercial communications satellites for relay, or store and forward to strategic downlink. Major benefits of utilizing this network are wider data/product distribution, no custom terminal costs, and no significant training because the interface is familiar to users. Advantage points are:

- The TacSat system provides an asset with a unique combination of desirable characteristics.
- The tactical microsatellite platform provides a mechanism to bring new technologies and capabilities to the force.
- Finally, the TacSat system allows space assets to become an organic tool of the warfighter.

TacSat 1



Concept of Operations (CONOPS)



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